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Revisiting the Army and Close Air Support: Disjointed Doctrine or  
Difference in Semantics?

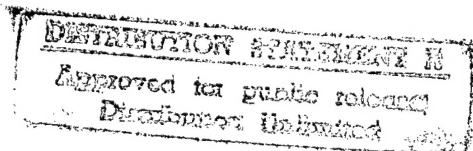
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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.



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15. Abstract In February 1993 review of Service Roles and Missions, Chairman Powell concluded that each Service Component has the ability to perform Close Air Support (CAS). Traditionally, this mission has been assigned to the Air Force. The Army, however, maintains a large fleet of attack helicopters that it uses for maneuver; and reconnaissance and security, in its attack helicopter battalions and air cavalry squadrons. Accordingly, the Army does not perform CAS. Employment of these organic attack assets as all Services reflect their unique organization, missions and capabilities. In this framework, the Joint Doctrine is disjointed and dysfunctional.			
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Abstract of

REVISITING THE ARMY AND CLOSE AIR SUPPORT: DISJOINTED DOCTRINE  
OR DIFFERENCE IN SEMANTICS?

The subject of Close Air Support (CAS) to the United States Army has been a matter of controversy almost since the Army's Wright Brothers demonstrated aerial flight at Kitty Hawk. While the Army has traditionally looked to the Air Force to perform this extremely difficult mission, the Army possesses a substantial organic CAS capability in its fleet of attack helicopters. This study reviews the evolution of Joint and Service doctrine concerning CAS, focusing on the Army's reluctance to embrace the CAS mission for its attack helicopter units and, in doing so, identifies the obvious doctrinal discrepancies. The paper follows the Army's transition of its attack helicopter force from a fire support asset in Vietnam to a maneuver force in *Desert Storm* and highlights the important distinction between the two. The study also addresses capabilities and limitations of current and future Army attack helicopters to perform CAS missions. Additionally, the study briefly reviews the Marine Corps' use of their organic fixed and rotary-wing aircraft for CAS and why it is not an appropriate model for the Army. In concluding, the paper supports the Army's use of its attack helicopter fleet in maneuver and security roles, reflecting its unique Service mission, organization and capabilities. In this framework, the Joint doctrine appears disjointed. The study also concludes that CAS remains a divisive issue, well beyond differences in simple semantics, and one that will continue to present challenges for Joint doctrine and for the Services.

## INTRODUCTION

Much has been written in recent past about Close Air Support (CAS) and the Services' ability to perform it. This subject area often evokes sharp emotional responses from those within the Armed Forces. To some degree this attitude reflects traditional Service prejudices, culture and rivalries. One Army writer describes the dispute best by noting that "long after the war is over, the smoke has cleared and the stench has faded away, the battle over Close Air Support continues. It's the battle of the fourth dimension – of roles and missions, of priorities and budgets, of innovation and narrow-mindedness – and it's been ongoing for over 70 years."<sup>1</sup>

Current Joint doctrine (Joint Pub 3-09.3, Joint Tactics, Techniques and Procedures for Close Air Support) would seemingly end the discussion. This JTTP succinctly states that "each component has the capability to perform CAS."<sup>2</sup> Further on in the publication, however, appears the following qualification: "Army armed and attack helicopters are usually employed as a maneuver unit capable of all normal maneuver force missions. In most circumstances, the Army does not consider attack helicopters a CAS system, although they can perform the CAS function when operating in support of another component."<sup>3</sup> A literal interpretation of the Joint definition of CAS ("air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces")<sup>4</sup> would seemingly permit Army attack helicopters to provide CAS to any of the other Services.

The Army, however, considers CAS an Air Force mission that may be employed with or support its ground forces or aviation brigades.<sup>5</sup> According to Army

doctrine, CAS missions are “controlled by the USAF through the tactical air control system.”<sup>6</sup> The Army also believes that “Navy, and Marine Corps aviation may be required to provide significant [CAS] to Army forces (including attack helicopter battalions).”<sup>7</sup> An attack helicopter unit commander may “coordinate indirect fire support and [CAS]”<sup>8</sup> but he doesn’t perform it.

Is this an example of disjointed doctrine or simply a difference in semantics? This paper examines this question and attempts to explain why the Army is adamant in disavowing a CAS role for its fleet of attack helicopters. In the context of Service uniqueness, the JTTP appears to be disjointed. Differences in Service attack aircraft, both fixed and rotary-wing, in organization and employment, go well beyond simple semantics. The conclusions support the Army’s use of their organic assets in maneuver and security roles, but offer several modifications of the Army’s position for better integration in the Joint community.

## EVOLUTION OF ATTACK HELICOPTERS IN ARMY AVIATION

In creating the Air Force from the Army’s Air Corps, the National Security Act of 1947 and its subsequent conferences at Key West and Newport were early attempts to gain consensus among the Services on roles and missions. CAS in support of the Army was a mission assigned exclusively to the Air Force.<sup>9</sup>

The Korean War saw the first introduction of rotary-wing aircraft into the Army. The first helicopters were extremely limited in their lifting capabilities, and were used almost entirely for medical evacuation (MEDEVAC) purposes. As the Air Force had no equivalent capability, there was little disagreement or Service rivalry

about the Army possessing rotary-wing aircraft. Later in the war, attempts were made to use more capable helicopters to tactically transport soldiers. Technical limitations, however, relegated rotary-wing aircraft to remain only a modest contributor to the warfight. At war's end, the helicopter remained essentially a MEDEVAC platform.

Introduction of the turbine engine and other technical advancements facilitated a much broader role of the helicopter during the Vietnam War. In addition to MEDEVAC and troop transport by the new turbine engine-equipped UH-1, medium lift Chinook helicopters were used to rapidly move supplies, artillery and vehicles. Additionally, OH-6 scout helicopters were used to locate the enemy. In 1962, the Howze Board promoted the development of an attack helicopter. Shortly after, the Army armed the UH-1 to provide fire support during airmobile insertions. While the Air Force remained the principal CAS supporter, the armed UH-1s provided the Army its first organic CAS capability. The Army's introduction of the world's first attack helicopter in 1966 (the AH-1G Cobra) continued this expanded role for rotary-wing aircraft. The Army used the new Cobras for Aerial Rocket Artillery platforms, preparation of Landing Zones during airmobile insertions as well as for fire support in close proximity to friendly forces. Attack aviators were uniquely adept at performing a return to target maneuver to attack enemy soldiers, usually under the direction of a soldier on the ground or another aviator in a scout helicopter.

If development of attack helicopters never advanced beyond this point, it would be difficult for the Army to contend that their organic attack helicopter force did not perform CAS. In the aftermath of Vietnam, however, rotary-wing aircraft and Army aviation grew in sophistication and matured with a resulting doctrinal change. In

realizing the importance of Army aviation to the warfight, the Army created the Aviation Branch in 1983, which began to develop doctrine and force development initiatives to better employ and organize the aviation force.

## ARMY ATTACK HELICOPTERS IN AIRLAND BATTLE

The Army introduced attack helicopter companies in their combat aviation battalions in the early 1970s. Built primarily around the latest model of the Cobra helicopter series (AH-1S), these companies (one in each battalion) were designed primarily to defeat enemy armor. By the mid-1980s these companies became the basis for newly formed attack helicopter battalions, located in each of the Army's divisions.

In the Army's force structure, each light division has an attack battalion assigned; each heavy division is assigned two attack battalions. Uniquely organized, the 101<sup>st</sup> Airborne Division (Air Assault) is assigned three attack (AH-64 Apache) battalions. Finally, each of the Army's four Corps is assigned an Attack Helicopter Regiment, each comprised of at least three attack helicopter battalions. All attack battalions are equipped with 24 aircraft. In other than attack helicopter battalions, attack helicopters may also be found in Air Cavalry Squadrons. All divisions and corps are assigned one air cavalry squadron. Air Cavalry units perform security (screen, guard, and cover) and reconnaissance missions. The attack helicopters in these squadrons normally provide protection for their organic scouts.

These attack units were considered a maneuver element or "combat units that use rapid maneuver and firepower to destroy the enemy and increase the tempo of operations."<sup>10</sup> As such, attack helicopters "are ideally suited for rapid reaction in close,

deep, or rear operations”<sup>11</sup> and contribute to all forms of offense and defense. To an Army officer, the distinction between a maneuver and fire support element is significant. The maneuver element is generally task-organized for a specific mission, operates on the command (maneuver) net, and is employed under a scheme of maneuver. Maneuver elements attack and defend. In comparison, a fire support element normally comes under the control of the senior artillery commander, appears on its organization for combat, is employed in direct or general support of a maneuver unit, or reinforces another fire support unit. These supporting elements remain on a fire control net, are controlled by the Fire Support Officer (FSO) and are integrated into the fire support plan. Fire support elements do not attack or defend. They may shoot in singles, sections, batteries or battalions. A maneuver unit (such as an attack helicopter battalion) may receive CAS platforms, as a fire support asset.<sup>12</sup>

Currently, there is no Army doctrinal basis for the tactical employment of a single, pair or a platoon of attack helicopters. Instead, these attack units are generally employed in mass, no smaller than a battalion.<sup>13</sup> This employment principle may represent the attack helicopters’ greatest benefit to the warfight. As one noted Air Force officer (COL John Warden, the primary architect of *Desert Storm’s* Air Campaign) remarked, “the mental shock to the enemy” that can be gained by the appearance of a massive force provides momentum whose impact goes well beyond the physical.<sup>14</sup> In contrast, Air Force CAS aircraft rarely operate in mass. Similarly, the Army’s Attack Helicopter Aircrew Training Manual (ATM) contains no procedure for an aviator to perform CAS (it should be noted that the ATM manual contains the task, condition and standard for every procedure the aviator is authorized to perform,



including such mundane tasks as pre-flight inspection, performing weight and balance computations, performance planning as well as every flight maneuver). The governing doctrinal manual for employment of the attack helicopter battalion (Field Manual 1-112, *Tactics, Techniques and Procedures for the Attack Helicopter Battalion*) contains no description of how a battalion performs CAS.

The Air Force, meanwhile, was not idle while the Army developed its attack helicopter force. In the early 1970s the Air Force introduced the A-10. This aircraft was “the only dedicated [CAS] aircraft ever bought by the Air Force.”<sup>15</sup> Ideally suited for the mission, the aircraft “is able to carry a large amount of ordnance, can loiter in the battle area for up to 1.7 hours, and was designed to survive light air defenses at low altitudes.”<sup>16</sup> One Air Force pilot noted that “every nut and bolt in the A-10 was designed and built to meet and defeat the [CAS] challenge of the 1970’s.”<sup>17</sup> During the years that the Army was moving further away from using its attack helicopters in direct support of the infantry, the Air Force was moving closer.

Both the Army and Air Force seemed comfortable with their respective, emerging roles. The Services jointly developed doctrine for the close integration of both attack helicopters and airplanes, in the form of Field Manual 90-21, Multiservice Joint Air Attack Team Operations. Focusing on the strengths of both systems, the resultant synergy produced a fearsome combat multiplier. During the 1986 review of Service’s roles and missions, both the Army and Air Force Chiefs of Staff agreed that the Air Force should remain the proponent for CAS. Their opinion, expressed to Admiral Crowe (Chairman, Joint Chiefs of Staff, who maintained that each Service had the ability to perform CAS), was that “the Army and the Air Force do not regard

attack helicopters as CAS weapons systems” and that “we have always carefully defined CAS as a function performed by Air Force fixed-wing aircraft.”<sup>18</sup> In this case, the Chairman deferred to his Service Chiefs.

Immediately prior to *Operation Desert Storm*, however, the Air Force began to lose its enthusiasm for the A-10 and its mission. Many in the Air Force contended that the Army could better perform the CAS mission for itself, using the A-10 aircraft. The Defense Authorization Act of 1988 “directed the Secretary of Defense to conduct an independent study of close air support, including the assessment of the feasibility of transferring the CAS mission from the Air Force to the Army.”<sup>19</sup> It was no coincidence that, at about the same time, many in Congress and in the Services began to question whether the Army possessed an organic CAS capability in its own attack helicopter fleet.

The Army, however, saw no benefit in assuming this mission (and aircraft) from the Air Force. Army aviation has historically consumed more than 20% of that Service’s Total Obligation Authority (TOA).<sup>20</sup> Placing A-10s in the Army would only increase the Aviation Branch’s percentage of the Service budget (at the expense of the other Army systems and priorities), and would transfer a role that had been traditionally performed by the Air Force. Additionally, very few Army installations had the fixed-base facilities to accommodate high-performance, fixed-wing aircraft. Senior Army leadership was unwilling to accept this burden.

After *Desert Storm*, however, the Air Force decided to retain both the aircraft and its traditional leadership in CAS, because of the tremendous success the A-10 enjoyed during that conflict. The Army was also satisfied with the role of their attack

helicopters, particularly in deep operations. Army attack helicopters went deep into Iraqi territory to attack vital components of the Iraqi Kari Air Defense System in order to open a corridor for the air attack on Baghdad. Prior to the start of the ground offensive in *Desert Storm*, attack helicopter battalions performed armed reconnaissance deep in Iraqi territory. During the ground offensive, attack helicopter battalions from the 101<sup>st</sup> went deep to lead their division attack. From the Army perspective, *Desert Storm* validated its Airland Battle doctrine with its emphasis on attack helicopters as a maneuver force.

Regardless of the doctrinal validation, in February 1993 Chairman Powell reversed a decision made by his predecessor in a revised Roles and Mission report, and decided that each Service had the capability to perform CAS. That decision was subsequently codified with the publication of Joint Pub 3-09.3.

## ARGUMENTS AND COUNTER-ARGUMENTS

There is little doubt that the Army's current attack helicopters (AH-64A Apache, and OH-58D Kiowa Warrior) can attack targets in close proximity to friendly forces. Both share the ability to fire a point-type weapon system, the Hellfire missile. Their other weapon systems (2.75" folding fin aerial rockets, 30mm or .50 caliber gun), however, are all classified as area fire weapon systems. Lacking the necessary precision, these weapons do not lend themselves to CAS missions (in order for Cobras in Vietnam to achieve the requisite accuracy, aviators often closed to prohibitive distances).

When circumstances require attack helicopter units to attack enemy targets in close proximity to friendly forces, attack helicopters offer many advantages over faster moving fixed-wing attack airplanes. Attack helicopter units usually have a much closer association with the ground maneuver force. They are generally more cognizant of the ground commander's tactical plan, have better intelligence of the enemy's tactical situation, and can more easily communicate with the ground maneuver commander (oftentimes the aviation unit maintains a liaison officer with the ground element). Also, helicopters generally enjoy a better (albeit smaller) view of the battlefield, particularly at night. Helicopters, of course, also have a greater ability to close with the enemy and remain in position.

In order to retain a high degree of survivability, the Army's attack helicopters have necessarily increased their standoff ranges. The Army's newest attack helicopter, the AH-64D Longbow Apache, carries a Radio Frequency (RF) Hellfire missile that employs fire-and-forget technology. The significant difference is that, unlike the AH-64A Apache, the Longbow Apache is not required to maintain a laser spot on the target for terminal guidance. The gunner rarely, if ever, directly views the target. Accordingly, engagement ranges can more easily approach the flight limitation of the missile (approximately 8 kilometers). The RAH-66 Comanche (the Army's next generation armed reconnaissance/light attack helicopter) employs the same RF Hellfire missile. In addition to engagements from longer range, attack aviators also normally fly in the Nap of the Earth (NOE) environment, for greater survivability from Air Defense missiles. This same technique, however, often places the helicopter at risk from small arms fire. Also, neither technique facilitates CAS. Greater standoff ranges

normally increase the probability of fratricide (by making positive identification more difficult); and lower altitudes generally decrease the precision of most direct-fire weapons (by increasing the cone of fire).

There are other limitations with Army helicopters. In spite of all their sophistication and capabilities, no Army helicopters possess the ability to mount bombs. For certain CAS targets where a "dumb," or other special purpose munition (napalm, fuel/air explosive; or precision-guided weapon) may be the best choice, Army helicopters are wholly inadequate for the mission. Also, the Longbow Apache's Fire Control Radar lacks the ability to target bunkers or buildings and, while it has the ability to automatically detect, classify and target wheeled or tracked vehicles, it cannot identify whether the target is friendly or enemy. Similarly, the Apache has no effective weapon to engage infantrymen who occupy prepared fighting positions. Finally, all helicopters are generally much slower than fixed-wing aircraft. Their slower speeds offer less protection from air defense forces than fixed-wing aircraft enjoy.

Like the Army, the Air Force has and will continue to "improve its fixed-wing CAS capabilities, by providing, among other things, night capability and a digital data-burst communications system [which] will allow CAS pilots to receive more accurate and timely targeting information."<sup>21</sup> In addition to the A-10, the Air Force trains and performs CAS with F-16s and other aircraft. The Air Force is also committed to a CAS-version of their next-generation aircraft, the Joint Strike Fighter.

In reviewing the potential role of the Army's attack helicopter fleet to perform CAS, it is necessary to consider the Marine model. While their fixed-wing attack

aircraft perform traditional CAS, their rotary-wing attack fleet performs Close-In Fire Support (CIFS). It may be tempting to conclude, as did the General Accounting Office, that Army helicopters, like Marine helicopters, “can be used for fire support or as maneuver units.”<sup>22</sup> However, “unlike the Army, the Marine Corps has not developed a maneuver doctrine for its attack helicopters, relying upon them as a fire support system.”<sup>23</sup> Even the name of their doctrinal publication for employment of their attack helicopters (FMFM 2-7, *Fire Support in Marine Air-Ground Task Force Operations*), leaves little doubt that that Service views this asset as a supporting force.<sup>24</sup> Like the Air Force (and Navy), the Marines routinely perform CAS in training. Additionally, the Marines have no equivalent to the Army’s air cavalry squadron. Instead, Marine attack aviation has but one mission – to support the infantryman.

Needless to say, there is very little consensus among the Services on the proper application of the Army’s attack helicopter fleet in the CAS mission. Several senior military officers believe that, because the Army has a better capability to perform CAS than the Air Force, the Army should appropriately assume proponentcy for CAS.<sup>25</sup> One individual, writing a research report at the Air War College, even suggested that “near term funding for Air Force CAS should be redirected to procurement of additional AH-64 helicopters” in that “this represents a potential for economies by reducing the redundancy of two services having the same capability” for CAS.<sup>26</sup> Most of these writers, however, wrongly (from the Army’s perspective) view attack helicopters as “fire support systems.”<sup>27</sup> Additionally, as already noted attack helicopters simply do not have the same capabilities as fixed-wing aircraft.

The Army is also reluctant to offer their attack helicopters for CAS, in the fear that they may then be included in air apportionment, and reflected in the Air Tasking Order (ATO) in order to gain a "firm commitment" for their employment.<sup>28</sup> The Army division or corps commander might find his organic attack assets tasked to support another Service component to provide CAS. More importantly, they would lose control of one of their most important maneuver assets to the Joint Force Air Component Commander (JFACC), who normally has other assets specifically for that purpose. Here it is important to note for comparison that, by Omnibus agreement, Marine aviation is generally retained by the Marine Air/Ground Task Force commander and is not made available to the JFACC.

## CONCLUSIONS

No Army officer would disagree with the statement that Army helicopters can perform CAS, and few would disagree that the Army possesses a significant attack helicopter capability. In today's inventory, the Army owns approximately 750 AH-64 Apaches and 380 OH-58D Kiowa Warriors (which will be replaced by the RAH-66 Comanche).<sup>29</sup> Legacy attack helicopters (AH-1 Cobra) are found only in the Army National Guard, and are being phased out. Considering the large numbers of attack helicopters and their capabilities, it may be tempting to conclude that the Army "has satisfied its CAS requirements in a de facto fashion."<sup>30</sup> Many senior Army officers also acknowledge that the Army's attack helicopter fleet has "substantially reduced the need for fixed-wing fire support."<sup>31</sup> However, this is not because the Army is performing CAS with its attack helicopters, but because the attack helicopters can

frequently maneuver against many of the same targets that might otherwise be engaged by fixed-wing CAS aircraft.

Most Army officers, however, would also argue that viewing their attack fleet as CAS assets misses the point. As one Air Force officer noted, "the argument concerning the Army providing its own CAS is . . . irrelevant."<sup>32</sup> Allocating attack helicopter units to CAS limits these units from contributing to other missions (reconnaissance in force; deliberate or hasty attacks, deep or close; delays, and other forms of maneuver) for which they are better organized, trained and equipped. Similarly, using the attack helicopters located in air cavalry squadrons would also seriously disrupt the squadrons' ability to perform their security missions.

The Army, like the other Services, supports "Jointness." However, all the Services believe that the intent of Goldwater-Nichols was "not to erase the differences in service philosophies and cultures [and that] the idea was that the unique characteristics and strengths of each service could be molded to complement one another so that the whole would be more than the sum of its parts."<sup>33</sup> In this framework, the JTTP for CAS appears disjointed. Few officers of other Services understand or appreciate how the Army employs its aviation forces. The Army has learned from combat experiences in Vietnam, Grenada, Panama and Saudi Arabia/Kuwait/Iraq, that its attack helicopter forces are best employed as maneuver units and is reluctant to use them as fire support assets. Employment of the Services' attack aircraft (fixed and rotary-wing) reflect their respective doctrine. Each uniquely contributes to the warfight. A Navy F/A-18 is not the same as an Air Force F-16, nor is a Marine Cobra the same as an Army Apache. Neither the aircraft nor the missions are



interchangeable. This is not a case of Service rivalry but Service uniqueness. The Army's rotary-wing attack helicopters are uniquely different in employment, organization, mission and capabilities than the other Services' fixed and rotary-wing attack fleets. The differences go well beyond simple definitions or semantics.

Doctrinal changes are undoubtedly necessary. Army and Joint doctrine are contradictory. The Army should consider developing doctrine to support engagement of select targets by small units of attack helicopters. There may be occasions when mass is less important, and missions may be performed by units smaller than battalion. The Army should also acknowledge, in its doctrine, that organic attack helicopter units are occasionally employed against some of the same targets that were formerly reserved for fixed-wing CAS. This would probably reduce CAS apportionment for the Army. However, the Joint Force Commander should realize that attack helicopters are not the panacea for the Army's CAS requirements and that the Army will continue to require fixed-wing CAS aircraft. Finally, consideration should be given to provide Army attack helicopters the same special relationship to Army divisions and corps that Marine aviation has with the Marine Air-Ground Task Force. Like Marine aviation, these forces should generally not be made available to the JFACC.

Changes in doctrine, roles and missions will probably change as a result of the Land and Littoral Warfare Joint Warfighting Capabilities Assessment's of joint close support needs and capabilities this Fiscal Year.<sup>34</sup> Additionally, the Joint Staff's Deep Attack Weapons Mix Study (DAWMS), nearing completion, will "assess current and future weapons necessary for each Service for the close battle."<sup>35</sup>

Chances are the chronic dispute about CAS will continue well into the future. The Army will continue to defend its' use of organic attack helicopter and air cavalry units as dedicated maneuver and reconnaissance and security forces. The other Services will consider these as CAS capable platforms and the Joint staff will continue to force the Services to accept more "Jointness." Finally, while there is little consensus about the proper role of the Army's attack helicopters in CAS, there is almost universal consensus that CAS will continue to play a "viable and important mission" in future battles.<sup>36</sup> In all likelihood this will not be the last paper written on the role of the Services in CAS.

## NOTES

- <sup>1</sup> Edward H. Littlejohn, *Close Air Support: Battle in the Fourth Dimension* (Carlisle Barracks, Pa.: U.S. Army War College, 1990), 1.
- <sup>2</sup> Joint Pub 3-09.3, *Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*, 1 Dec 95, ix.
- <sup>3</sup> Joint Pub 3-09.3, *Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*, 1 Dec 95, xii.
- <sup>4</sup> Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 23 Mar 94, 74.
- <sup>5</sup> Field Manual 1-111, *Aviation Brigades* (Washington D.C.: Department of the Army, August, 1990), 4-4.
- <sup>6</sup> Field Manual 1-111, *Aviation Brigades* (Washington D.C.: Department of the Army, August, 1990), 4-5.
- <sup>7</sup> Field Manual 100-5, *Operations* (Washington D.C.: Headquarters, Department of the Army), 14 June 93, 2-10.
- <sup>8</sup> Field Manual 1-112, *Attack Helicopter Battalions* (Washington, D.C.: Department of the Army, 1991), 3-7.
- <sup>9</sup> Thomas W. Garrett, *Close Air Support: Why all the Fuss?* (Carlisle Barracks, Pa. U.S. Army War College: 1990), 7.
- <sup>10</sup> Field Manual 1-112, *Attack Helicopter Battalions* (Washington, D.C.: Department of the Army, 1991), 1-2.
- <sup>11</sup> Field Manual 100-5, *Operations* (Washington D.C.: Headquarters, Department of the Army), 14 June 93, 2-23.
- <sup>12</sup> Field Manual 1-112, *Attack Helicopter Battalions* (Washington, D.C.: Department of the Army, 1991), 5-1.
- <sup>13</sup> Field Manual 1-112, *Attack Helicopter Battalions* (Washington, D.C.: Department of the Army, 1991), 1-3.
- <sup>14</sup> John A. Warden, *The Air Campaign/Planning for Combat* (Fort Lesley J. McNair, Washington D.C.: 1988), 118.
- <sup>15</sup> Thomas W. Garrett, *Close Air Support: Why all the Fuss?* (Carlisle Barracks, Pa. U.S. Army War College: 1990), 10.

<sup>16</sup> United States General Accounting Office report to Congressional Committee, "Combat Air Power/Assessment of Joint Close Support Requirements and Capabilities is Needed", (Washington, D.C: 1996), 20.

<sup>17</sup> Robert S. Hinds, *Replacing the A-10* (Maxwell Air Force Base, AL: Air War College, Air University, May, 1989), 3.

<sup>18</sup> Thomas W. Garrett, *Close Air Support: Why all the Fuss?* (Carlisle Barracks, Pa. U.S. Army War College: 1990), 2, citing memorandum between Carl E. Vuono, GEN, USA, and Larry D. Welch, GEN, USAF, *Close Air Support*, n.p.

<sup>19</sup> Thomas W. Garrett, *Close Air Support: Why all the Fuss?* (Carlisle Barracks, Pa. U.S. Army War College: 1990), 4, citing Emmett R. White, LTC, *Close Air Support: A Case for Divestiture Planning in the Department of Defense (DoD)*, 1.

<sup>20</sup> *1996 Army Modernization Plan* (Washington D.C.: Department of the Army, Office of the Deputy Chief of Staff for Plans and Operations, Force Development, 1996).

<sup>21</sup> United States General Accounting Office report to Congressional Committee, "Combat Air Power/Assessment of Joint Close Support Requirements and Capabilities is Needed", (Washington, D.C.: 1996), 22.

<sup>22</sup> United States General Accounting Office report to Congressional Committee, "Combat Air Power/Assessment of Joint Close Support Requirements and Capabilities is Needed", (Washington, D.C: 1996), 15.

<sup>23</sup> William H. Bryan, *Close Air Support Doctrine Dynamic Future or Dogmatic Past* (Maxwell AFB, AL: Air War College, Air University, 1994), 12.

<sup>24</sup> Fleet Marine Force Manual 2-7, *Fire Support in Marine Air-Ground Task Force Operations* (Washington, D.C.: Headquarters United States Marine Corps, 1991), 1-1.

<sup>25</sup> William H. Bryan, *Close Air Support Doctrine Dynamic Future or Dogmatic Past* (Maxwell AFB, AL: Air War College, Air University, 1994), 19.

<sup>26</sup> Leslie R. Kemp, *Close Air Support Today and Tomorrow* (Maxwell Air Force Base, Alabama: 1989), 31.

<sup>27</sup> William H. Bryan, *Close Air Support Doctrine Dynamic Future or Dogmatic Past* (Maxwell AFB, AL: Air War College, Air University, 1994), 19.

<sup>28</sup> Brian W. McLean, *Joint Training for Night Air Warfare* (Maxwell Air Force Base: Air University Press, 1992), 38.

<sup>29</sup> *1996 Army Modernization Plan* (Washington D.C.: Department of the Army, Office of the Deputy Chief of Staff for Plans and Operations, Force Development, 1996).

<sup>30</sup> Leslie R. Kemp, *Close Air Support Today and Tomorrow* (Maxwell Air Force Base, Alabama: 1989), 11.

<sup>31</sup> United States General Accounting Office report to Congressional Committee, "Combat Air Power/Assessment of Joint Close Support Requirements and Capabilities is Needed", (Washington, D.C: 1996), 28, citing the Army's submission to the Roles and Missions of the Armed Forces, n.p.

<sup>32</sup> Robert S. Hinds, *Replacing the A-10* (Maxwell Air Force Base, AL.: Air War College, Air University, May, 1989), 8.

<sup>33</sup> Michael R. Gordon and General Bernard E. Trainor, *The General's War* (Boston: Little, Brown and Company, 1995), 471.

<sup>34</sup> United States General Accounting Office report to Congressional Committee, "Combat Air Power/Assessment of Joint Close Support Requirements and Capabilities is Needed", (Washington, D.C: 1996), 26.

<sup>35</sup> Memorandum, Office of the Assistant Secretary of Defense, 3 May 96, n.p., n.p.

<sup>36</sup> Thomas W. Garrett, *Close Air Support: Why all the Fuss?* (Carlisle Barracks, Pa. U.S. Army War College: 1990), 48.

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